

100+ Most Frequently Asked Math Questions (English PDF)



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1.Find the mean of the distribution: 130, 90, 25, 77, 250, 100 A. 25 B. 77 C. 100 D. 112

Ans: D

Sol: 130+ 90+ 25+77+ 250+100 = 672 ∴ Mean= 672/6 = 112 Hence, option D is the correct answer.

2.Find the mode of the following data:110, 80, 70, 90, 120, 90, 80, 70, 60, 80

A. 80

B. 110

C. 90

D. 120

Ans: A

Sol:

Mode of a set is the number with the highest frequency.

In the given data, number 80 the most repetitive number.

Hence, option A is the correct answer.

3.If the mean height of 12 men is 1.70 m and the mean height of 8 women is 1.60 m, then the total height of 8 women in meters is:

A. 12.9

B. 12.8

C. 12.4

D. 13

Ans: B Sol:

Since, mean height of 8 women is 1.60 m \therefore Total height of 8 women will be $8 \times 1.60 = 12.8$ m Hence, option B is the correct answer. 4.If the standard deviation of a population is 4.5. What is its variance?
(A) 20.25
(B) 20
(C) 9
(D) 18
A. (D)
B. (C)
C. (B)
D. (A)

Ans: D

Sol:

 $Variance = (4.5)^2 = 20.25$

5.The temperature recorded for a particular week is given below:

Days of week	Temperature in Celsium
Sunday	28
Monday	32
Tuesday	35
Wednesday	30
Thursday	31
Friday	29
Saturday	29

What was the average temperature for the week in degree C?

(A) 29
(B) 30.5
(C) 31.5
(D) 32
A. (A)
B. (D)
C. (C)
D. (B)

Ans: D

Sol:

Average temperature of the week in degree $C = \frac{28+32+35+30+31+29+29}{7} = 30.5$

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6.The average weight of 19 students is 15 kg. By the admission of a new student the average weight is reduced to 14.8 kg. The weight of new student is :

A. 10.6 kg

B. 10.8 kg

C. 11 kg

D. 14.9 kg

Ans: C

Sol: Given: Average of 19 students = 15Total weight of all 19 students = $19 \times 15 = 285$ kg

After admission of a new student average becomes 14.8 now,

Total weight of 20 students = $20 \times 14.8 = 296$ kg

Hence, weight of a new student= 296-285=11 kg

7.The average of marks of 14 students calculated as 71. But it was later found that the marks of one student had been wrongly entered as 42 instead of 56 and of another as 74 instead of 32. The correct average is A. 67

B. 68

C. 69

D. 71

Ans: C

Sol: Marks obtained by 14 students=14 \times 71=994 Exact marks of 14 students=994+[(56-42)+(32-74)]=966

Correct average=966/14=69

8.Speed of a boat in still water is 12 kmph and that of the current is 3 kmph. A man rows a boat upstream up to 135 km and returns downstream to the starting point. Find the total time taken for the entire journey in hours?

A. 24

B. 48

C. 36

D. 30

Ans: A Sol: Speed of boat in still water (x) = 12 kmph Speed of current (y) = 3 kmph Speed of boat during upstream (x-y)= 12 – 3 = 9 kmph Speed of boat during downstream(x+y) = 12+3 = 15 kmph A man rows a boat upstream up to 135 km and returns downstream to the starting point. Required Time = $\frac{135}{9} + \frac{135}{15} = 15 + 9 = 24$ kmph

9.A man can row 12 km/hour in still water, when the river is running @ 3 km/hour, it takes him 1 hour to row to a place and to come back. How far is the place (in KM)?

A. 45/8 B. 45/4 C. 25/8 D. 15

Ans: A

Sol: Let the distance is d.

$$\frac{d}{12+3} + \frac{d}{12-3} = 1$$
$$\frac{d}{15} + \frac{d}{9} = 1$$
$$\frac{8d}{45} = 1$$
$$8d = 45$$
$$d = 45/8 \text{ Km}$$

10.Points A, B and C are situated at the bank of a river, which is flowing at a constant rate. B is at an equal distance with A and C, a swimmer Raj takes 10 hours to swim from A to B, and B to A. also he takes 4 hours to swim from A to C. what is the ratio of speed of Raj in still water and speed of stream?



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A.	5:3
Β.	4:3
C.	6:5
D.	7:2

Ans: A Sol:



AB = AC

(A to B) (B to C) = 10 hr

$$(A \text{ to } B) = \frac{4}{2} = 2hn$$

(B to A) = 10 - 2) = 8hr

$$\frac{x+y}{x-y} = \frac{8}{2}$$

X + y = 4x - 4y

5y = 3x

 $\frac{x}{y} = \frac{5}{3} \Longrightarrow 5:3$

11.A river 3 m deep and 40 m wide is flowing at the rate of 2 km/h. How much water (in litres) will fall into the sea in 1 minute?

A. 400000 B. 4000000 C. 40000

D. 4000

Ans: B

Sol: Speed of the current = 2km/h = 10/18m/sec Cross sectional area = $3 \times 40 = 120m^2$



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Volume flow rate $=10/18 \times 120 = 400/6$ = 200/3 cu.metre per second 1 cu. Metre = 1000 litre 200 cu.metre = 200000litre Flow in 1 second = 200000/3 litre Flow in 60 second = 200000/3 × 60 = 4000000 litre

12. There is a 40% increase in an amount in 4 years at simple interest. What will be the compound interest on Rs. 6000 after 3 years at the same rate?A. Rs. 1260B. Rs. 1986C. Rs. 19860

D. Rs. 7986

Ans: B Sol: Let principal = P unit

$$\frac{40P}{100} = \frac{2}{5}P$$

Simple interest for 4 years = 100We know that,

Simple Interest = $\frac{\text{Principal} \times \text{rate} \times \text{time}}{100}$

$$\Rightarrow \frac{2}{5}P = \frac{P \times R \times 4}{100}$$
$$R = \frac{200}{20} = 10\%$$

Now, we have to find compound interest on Rs. 6000 after 3 years at 5%.

Amount = Principal
$$\left(1 + \frac{Rate}{100}\right)^3$$

Amount = $6000 \left(1 + \frac{10}{100}\right)^3 = 6000 \times \frac{11}{10} \times \frac{11}{10} \times \frac{11}{10} = \text{Rs. 7986}$

Hence, Required Compound Interest = Rs.7986 - Rs. 6000 = Rs. 1986

13.A certain sum amounts to Rs 7200 in 2 years at 20% per annum compound interest, compounded annually. Find the sum?
A. Rs. 4800 B. Rs. 6000
C. Rs. 5400 D. Rs. 5000

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Ans: D Sol: Amount = Rs. 7200 Rate = 20% Time = 2 years According to question $\Rightarrow \qquad Amount = P\left(1 + \frac{R}{100}\right)^{T}$ $\Rightarrow \qquad 7200 = P\left(1 + \frac{20}{100}\right)^{2}$ $\Rightarrow \qquad 7200 = P\left(1 + \frac{1}{5}\right)^{2} = P\left(\frac{6}{5}\right)^{2}$ $\Rightarrow \qquad P = 7200 \times \frac{5}{6} \times \frac{5}{6} = \text{Rs. 5000}$

14.Mr. Sathya invested money in FD. How much will he get on maturity, if Rs. 14,500 is invested at 20% per annum compound interest for 6 months, compounded quarterly?A. Rs. 15,986.25B. Rs. 15,986.5C. Rs. 15,986.35D. Rs. 15,986

Ans: A Sol: Principal = Rs. 14500 Rate = 20% Time = 6 months For quarterly compounded, Amount

 $14500 \left(1 + \frac{\frac{20}{4}}{100} \right)^{2} = 14500 \left(1 + \frac{1}{20} \right)^{2} = 14500 \times \frac{21}{20} \times \frac{21}{20} = \text{Rs. } 15986.25$

Hence, he will get Rs. 15986.25 on maturity.

15.K borrowed Rs. P at a compound interest of 20% p.a. for 2 years. Interest amount payable was Rs. 5,280. What was the value of P?
A. Rs. 12,000 B. Rs. 11,000 C. Rs. 11,750 D. Rs. 12,500

Ans: A

Sol: K borrowed Rs. P at a compound interest of 20% p.a. for 2 years. Interest amount payable was Rs. 5,280.

$$P\left(1+\frac{20}{100}\right)^{2} = P+5280$$

$$\Rightarrow P \times \frac{6}{5} \times \frac{6}{5} = P+5280$$

$$\Rightarrow \frac{36}{25}P = P+5280$$

$$\Rightarrow \frac{11}{25}P = 5280$$

$$\Rightarrow P = 5280 \times \frac{25}{11} = \text{Rs. } 12000$$

16.Find the fourth proportional to 2, 3, 6? A. 9 B. 10 C. 7 D. 8

Ans: A Sol: Let the fourth proportional be x. Then, 2 : 3 = 6 : x $x = (6 \times 3)/2 = 9$ Hence, option A is the correct answer.

17.Mr. Prabhat borrowed Rs. 8000 at 5% per annum compound interest. The compound interest compounded annually for 2 years is :(A) Rs. 820 (B) Rs. 8820

(C) Rs. 8802 (D) Rs. 802 A. (B) B. (D) C. (C) D. (A)

Ans: D Sol: Principal=P=8000 Rs. Interest rate=r=5% p.a. Time=t=2 year



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Compound interest= $8000 \times \left(\frac{105}{100}\right)^2 - 8000 = 8820 - 8000 = 820 Rs.$

18.The difference between simple interest and compound interest on a certain sum of money at 5% per annum for 3 years is Rs.
14.48 . Find the principle. (Rounded off)
(A) Rs. 1850 (B) Rs. 1999
(C) Rs. 1899 (D) Rs. 2160

- À. (A)
- B. (D)
- C. (C)
- D. (B)

Ans: C Sol: Let the principal be P

Simple interest for 3 years at 5% per annum = P*5*3/100 = 15P/100

Compound interest for 3 years at 5% per annum = $P(1+5/100)^3 - P = 1261P/8000$

Difference between CI and SI = 1261P/8000 - 15P/100 = 61P/8000 = 14.48

61P/8000 = 14.48

P = 14.48*8000/61 = Rs. 1899

19.R borrowed 1200 at 13% per annum simple interest. What amount will R pay to clear the debt after 5 years?

(A) 1860
(B) 1880
(C) 1980
(D) 2000
A. (A)
B. (B)
C. (C)

C. (C) D. (D)

Ans: C



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Sol: S.I = (PxRxT)/100

(1200x13x5)/100 =780

Amount after 5 years = 1200 + 780 = 1980

20.Mr. Vinod borrowed Rs. 9000 at 5% per annum compound interest. The compound interest compounded annually for 2 years is:

A. Rs. 922.5 B. Rs. 9921.5 C. Rs. 921.5 D. Rs. 9922.5

Ans: A Sol: Principal = Rs. 9000 Rate = 5% Time = 2 years Amount =

$$9000\left(1+\frac{5}{100}\right)^2 = 9000 \times \frac{105}{100} \times \frac{105}{100} = \text{Rs. } 9922.5$$

Compound Interest = Rs. 9922.5 – Rs. 9000 = 922.5

21.A sum of money invested at compound interest amounts in 3 years to Rs. 9,600 and in 4 years to Rs. 10,080. The interest rate per annum is:
(A) 18% (B) 5%
(C) 10% (D) 12%
A. C
B. A
C. D
D. B

Ans: D
Sol:

Let the rate of interest be r%.

$$\frac{10080}{9600} = \frac{\left(1 + \frac{r}{100}\right)^4}{\left(1 + \frac{r}{100}\right)^3}$$

$$\Rightarrow 21/20 = 1 + r/100$$



 $\Rightarrow 1 + 1/20 = 1 + r/100$ x = 19(33k + 2) + 5 \Rightarrow r = 5% So, on dividing x by 19 the remainder will be 5. 22. What number should be deducted from 1265 to make it exactly divisible by 29? 24. The LCM of two numbers is 40 times its A. 18 HCF. If the product of the numbers is 1440, **B**. 17 find their HCF. C. 16 A. 6 D. 15 B. 12 C. 15 Ans: A D. 8 Sol: We can write $1265 = 43 \times 29 + 18$ Ans: A Sol: So make the number divisible by 29 we The LCM of two numbers is 40 times its have to subtract 18 HCF. $LCM = 40 \times HCF$ 23.A number is divided by 627 then 43 is We know that, $LCM \times HCF = 1440$ remainder. If the number is divided by 19 $\Rightarrow 40 \times HCF \times HCF = 1440$ then what will be the remainder? \Rightarrow $(HCF)^2 = 36$ (A) 5 (B) 18 \Rightarrow HCF = 6 (C) 13 (D) 7 25.Two numbers are in ratio 3 : 8 and their A. (D) HCF is 7. Their LCM is: B. (C) A. 186 C. (B) B. 56 D. (A) C. 21 D. 168 Ans: D Sol: Ans: D Let number be the x. Sol: We know that. Let the numbers are 3x and 8x. $dividend = divisor \times quotient + remainder$ HCF of 3x and 8x is x. When x is divided by 627, the remainder is $\therefore \mathbf{x} = 7$ 43. \therefore Numbers are $3 \times 7 = 21$ and $8 \times 7 = 56$ x = 627k + 43, where k is quotient. Now. Here x is multiple of 627. LCM of (21, 56) = 168 Let us consider the factor s of 627, Hence, option D is the correct answer. $627 = 3 \times 19 \times 11$ We have to find the remainder when 26.Find the LCM of 24, 96 and 36 dividing by 19 so expressing the equation A. 576 in term of 19 is helpful. B. 216 $As 43 = 19 \times 2 + 5$ C. 288 D. 144 Therefore $x = 3 \times 19 \times 11 \times k + (19 \times 2 + 5) = 19(33k + 2) + 5$



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Ans: C **Sol:** p and q are in the ratio 4 : 3 Sol: $\Rightarrow p = 4k$ Consider LCM of 24, 96 and 36. \Rightarrow q = 3k $24 = 2^3 \times 3$ LCM (p,q) = (4k,3k) = 12k $96 = 2^5 \times 3$ According to question $36 = 2^2 \times 3^2$ $\Rightarrow 12k = 36$ LCM (24, 96, 36) = $2^5 \times 3^2 = 288$ \Rightarrow k = 3 hence, p = 1227.Find the HCF of 143, 77 and 121 q = 9A. 6 \Rightarrow p+q =12+9 = 21 **B**. 11 C. 4 30. There is 6% of sugar in a 5 litre mixture D. 7 of sugar. Out of it 1 litre water vapourises. Find the percentage of sugar in the Ans: B remaining mixture? Sol: (A) 5% HCF of 143, 77 and 121. (B) 7.5% $143 = 11 \times 13$; $77 = 11 \times 7$; $121 = 11 \times 11$ (C) 6% Hence, HCF of 143, 77 and 121 = 11 (D) 4% A. (C) 28. Find the LCM of given data-B. (D) 28132 C. (B) 3'9'27'81 D. (A) (A) 32/81 (B) 81/32 (C) 32/3 (D) 11/41 Ans: C A. (D) **Sol:** Sugar in the initial mixture = $(6/100) \times$ B. (A) 5 = 0.3 litres C. (C) D. (B) The remaining is water in the mixture. Thus, Water in the mixture = 5 - 0.3 = 4.7Ans: C litres. Sol: LCM of fractions = (LCM of Now since 1 ltr water vaporizes: Numerator)/(HCF of denominator) New quantity of water in mixture = 3.7litres. Hence the LCM of the given fractions = (LCM of 2,8,1,32)/(HCF of 3,9,27,81) So, percentage of sugar in final mixture = $(0.3/4) \times 100 = 7.5\%$ LCM = 32/331.Ratio of spirit and water in 20 litre and 29.If p and q are in the ratio 4 : 3 and their 36 litre misture are 3 : 7 and P : O. If two LCM is 36, p + q = ?mixtures and mixed in each other then the A. 18 ratio of spirit and water is resultant mixture B. 21 is 27 : 29. Then find P : Q: C. 24 (A) 3 : 2(B) 5:7 D. 12 (C) 7 : 5 (D) 4 : 5 A. (D) B. (A) Ans: B C. (B) D. (C)



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Ans: D Sol: Spirit : Water 3 : 7 --- (in 20L mixture) $(3 \times 20)/10$: $(7 \times 20) / 10$ 6:14 P: Q ---(36L mixture)After mixing both the mixtures, the ratio become 27 : 29 ---(56L mixture) 6 + P = 27P = 27 - 6P = 2114 + Q = 29O = 29 - 14Q = 15P: Q = 21: 15 = 7: 5Option D is correct.

32.In what ratio a green mix two varieties of tea costing Rs. 400 Rs/kg of Darjeeling tea and 300 Rs.kg of Assam tea. So as on selling the mixture at Rs 408, he can get 20% profit?

(A) 1 : 2

- (B) 2 : 3
- (C) 2 : 5
- (D) 1 : 6
- A. (A)
- B. (C) C. (D)
- D. (B)

Ans: D

Sol:

We will solve it by mixture & Alligation method –





Required Ratio = 2 : 3

33.A question and three statements labelled (I), (II) and (III) are given. You have to decide which statement(s) is/are sufficient to answer the question.

Question: What is 40% of a number? **Statements:**

I. 25% of the number is 60 less than the number.

II. 20% of the number is an even number.

III. 5% of twice the number is one tenth of the number.

A. Only I is sufficient.

B. Both II and III are sufficient.

C. Statement II and either I or III are sufficient.

D. Only III is sufficient.

Ans: A

Sol:

Let the number is x.

 $\frac{25}{100}x + 60 = x \Rightarrow \frac{75x}{100} = 60 \Rightarrow x=80$ II) Insufficient information. $\frac{5}{100} \times 2x = \frac{1}{100}x$

 $\frac{5}{100} \times 2x = \frac{1}{10} x$, again undecided. \therefore only (I) is sufficient to find the number. Hence, option A is the correct answer.

34.What is 7/8th of 60% of 80? A. 42 B. 48 C. 28 D. 56 **Ans:** A

Ans: A Sol:



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 $\frac{7}{8^{\text{th}} \text{ of } 60\% \text{ of } 80 = \frac{7}{8} \times \frac{60}{100} \times 80 = 42}$ Hence, option A is the correct answer.

35.A worker's salary was increased by 30%, so that his salary became Rs. 910. How much did he earn before the increase? A. 1300

B. 880

- D. 880 C. 700
- C. /00
- D. 810

Ans: C Sol:

Let the salary was 100x \therefore New salary, 100x+30x = Rs 910 $\Rightarrow 130x = 910$ $\Rightarrow x = 7$ \therefore Initial earning was 100x = Rs 700Hence, option C is the correct answer.

36.In a class of 60 students, 60% are boys. If 25% of the girls come to school by bicycle. Find the number of girls who don't come cycling to school?

A. 24

B. 27 C. 18

D. 36

D. 50

Ans: C Sol:

Total students = 60

 $60 \times \frac{60}{100} = 36$ Number of boys = 60 - 36 = 2425% of the girls come to school by bicycle. \Rightarrow There are 75% girls who don't come cycling to school. \Rightarrow Hence, Number of girls who don't come $\frac{75}{100} \times 24 = 18$ cycling to school = $\frac{75}{100} \times 24 = 18$

37.What is 15% of 38?A. 6B. 5C. 5.5D. 5.7

Ans: D

Sol:

15% of $38 = (15 \times 38)/100 = 570/100 = 5.7$ Hence, option D is the correct answer.

38.In a class test, a student scored 22 marks out of 25 marks. The student's marks in percentage are:

- A. 88 B. 80
- C. 90
- D. 75

Ans: A

Sol: Percentage of the marks scored is = $\frac{22}{25} \times 100 = 22 \times 4 = 88\%$

Hence, option A is the correct answer.

39. When the price of a washing machine was reduced by 30%, its sale increased by 70%. What was the net effect on the revenue? (A) 44% decrease (B) 19% decrease (C) 44% increase (D) 19% increase A.C B.A C.D D.B Ans: C Sol: Let, The initial price of the washing machine = 10x unit Now new price = 7x unit Also, Initial sales units of the washing machine = 10y units Now new sales units = 17y units So, Initial revenue = $10x \times 10y = 100xy$ New revenue = $7x \times 17y = 119xy$ Thus, Percentage change in revenue = $[(119xy - 100xy)/100xy] \times 100$ \Rightarrow (19/100) × 100 = 19% increase



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40.Sania won 18 matches out of 27 matches. Find the lost matches in decimal (A) 0.333

(B) 0.033

(C) 0.50

(D) 0.667

A. (A)

B. (C)

C. (B)

D. (D)

Ans: A

Sol:

Sania won 18 matches out of 27 matches, so she lost 9 matches out of 27 $=\frac{9}{27}=0.333$

41.The population of a village is 3500, out of which 44% are men, 35% women and the rest are children. Find the number of children in the village.

A. 1120

B. 1540

C. 735

D. 1050

Ans: C

Sol: Total Population of man = $3500 \times 44\%$ = 1540 Total Population of woman = $3500 \times 35\%$ = 1225 Total Population of men and women =1540 +1225 = 2765 Population of children = 3500 - 2765= 735

Alternate Approach:

Percentage of children in village = 100 - (44+35) = 21Hence, number of children in village = (3500*21)/100 = 735

42.Tulsiram's salary is 20% more than that of kashyap. If Tulsiram saves ₹ 720 which is 4% of his salary, then Kashyap's salary is A. ₹ 15000 B. ₹ 12000 C. ₹ 10000 D. ₹ 22000

Ans: A Sol: Let Kashyap's salary be $\exists x$. Therefore, Tulsiram's salary = $\exists x = \frac{1}{2} \left(x + \frac{20}{100}x\right)_{=} \frac{6x}{5}$

Tulsiram saves ₹720 which is 4% of his salary.

Therefore,

$$4\% \times \frac{6x}{5} = 720 \implies \frac{4}{100} \times \frac{6x}{5} = 720$$
$$x = \frac{720 \times 100 \times 5}{24} = x = ₹15000$$

Thus, Kashyap's salary is ₹15000.

43.5 kg of tea and 8 kg of sugar together cost Rs. 172. The price of tea has risen by 20% and that of sugar by 10%. Hence the same quantities of tea and sugar now cost Rs. 199.20. What is the original price of tea per kg?

A. Rs. 18/kg B. Rs. 19/kg C. Rs. 20/kg D. Rs. 16/kg

Ans: C

Sol: Let the price of 1 kg of tea be Rs x and 1 kg of sugar be Rs y Thus 5x + 8y = 172.....(i) New per kg price of tea = Rs 120x/100 New per kg price of sugar = Rs 110y/100



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As per new prices 5(120x/100) + 8(110x/100) = 199.20Thus 44y/56x + 199.20.....(ii) From Equation (i) x = (172 - 8y)/5....(iii)Substituting the value of y in equation(ii) we get; 1032 - 4y = 996v = 9Substituting the value of y in (iii); we get x = Rs 20 per kgHence Option C is correct

44.Ravi invested ₹ 913 partly in 4% stock at ₹ 97 and partly in 5% stock at ₹ 107. If his income from both is equal, amount invested on first stock was

A. ₹ 750 B. ₹ 525 C. ₹ 610 D. ₹ 485

Ans: D

Sol: Let he invests ₹ x in 4% stock and ₹ y in 5% stock On ₹ 97 he earns Rs.4.On ₹ x he earns 4x/97 Similarly on ₹ y he will earns 5y/107 4x/97 = 5y/107X = 485y/428 X + y = 913 Substituting the value of x we get y = 428 First installment = ₹ 485

45.The price of sugar is reduced by 20%. Now, a person can buy 500 g more sugar for ₹ 36. The original price of the sugar per kilogram was A. ₹ 14.40 B. ₹ 18

- C. ₹ 15.60
- D. ₹ 16.50

Ans: B

Sol:

Let the original price of sugar be Rs. x/kg.

 $\therefore \text{ Reduced price of sugar} = x - \frac{20x}{100}$ $= \text{Rs.} \frac{4x}{5}$ $\therefore \qquad \frac{36}{4x} - \frac{36}{x} = 0.5$ $\Rightarrow \qquad \frac{45}{x} - \frac{36}{x} = 0.5$ $\Rightarrow \qquad \frac{9}{x} = 0.5$ $\therefore \qquad x = \frac{9}{0.5}$

= Rs. 18/kg

Hence, option B is correct.

46.Production of sugar in 2001 was 1584 million which was 20% more than 1991's production. Find the production of sugar in 1991. (In million kg.)

(A) 1320
(B) 1280
(C) 1900
(D) 1920
A. (A)
B. (B)

C. (D)

D. (C)

Ans: A

Sol: Production in 2001 = 20% more than production in 1991 = 1584 million kg 120% of production in 1991 = 1584 million kg



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Production in 1991 = 1584 x (100/120) = 1320 million kg

47.A batsman scored 150 runs in a one-day cricket match. He hit 20 fours and 5 sixes. Calculate the percentage of runs he scored by running between the wickets.

A. 25%

B. 73.33%

C. 25.67

D. 26.67%

Ans: D

Sol:

A batsman scored 150 runs in a one-day cricket match.

Number of fours = 20

Number of sixes = 5

Number of runs scored by fours and sixes = $20 \times 4 + 5 \times 6 = 80 + 30 = 110$

Number of runs scored by running between the wickets = 150 - 110 = 40

Required percentage = $\frac{40}{150} \times 100 = 26.67\%$

48.In a class test, a student scored 9 out of 25 marks. The student's marks expressed as a percentage is:

A. 30 B. 36

C. 35

D. 25

Ans: B

Sol:

In a class test, a student scored 9 out of 25 marks.

Percentage of marks scored = $\frac{9}{25} \times 100 = 36\%$

49.A person pays Rs. 8960 per month towards loan repayment which is 28% of his monthly salary. Calculate his monthly salary.

A. Rs. 32,000 B. Rs. 34,000 C. Rs. 28,000 D. Rs. 30,000

Ans: A

Sol: A person pays Rs. 8960 per month towards loan repayment which is 28% of his monthly salary. $\Rightarrow 28\%$ of his monthly salary = Rs. 8960 => 1 % of his monthly salary = Rs. 320 \Rightarrow 100% of his monthly salary = Rs. 32000 50.If a student's marks were increased by 25%, he would have scored 75 in his test. How much did he actually score? A. 60 B. 50 C. 15 D. 25 Ans: A Sol: 125% of the student's marks = 75100% of the student's marks = (75/125) x 100 = 60Hence, Required marks = 6051. The monthly salaries of P and Q are in the ratio 4:3. If P and Q get an increase of 10% and 5% of their existing salaries respectively, what will be the new ratio? A. 88 : 63 B. 63 : 88 C. 45 : 60

Ans: A

D. 60:45

Sol: The monthly salaries of P and Q are in the ratio 4:3. Let monthly salary of P = 4k

Monthly salary of Q = 3k

P and Q get an increase of 10% and 5% of their existing salaries respectively.

New salary of P =
$$4k + 4k \times \frac{10}{100} = 4k + 0.4k = 4.4k$$



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New salary of Q =

$$3k + 3k \times \frac{5}{100} = 3k + 0.15k = 3.15k$$

New Ratio = 4.4k : 3.15k = 440 : 315 =
88:63

52.A container has two holes. The 1st hole alone empties the container in 15 minutes and 2^{nd} hole alone empties the container in 10 minutes. If water leaks out at a constant rate, how long (in minutes) does it take if both the holes together empty the container?

A. 6 **B**. 1/6

C. 1/7

D. 7

Ans: A Sol:

Time taken by 1st hole to empties the container = 15 minute

Time taken by 2nd hole to empties the container = 10 minuteLet total capacity of container = LCM (15,

10) = 30 UNIT

Efficiency of 1^{st} hole = $\frac{30}{15}$ = 2 unit Efficiency of 2^{nd} hole = $\frac{30}{10}$ = 3 unit Time taken by both the holes together $\frac{30}{2+3} = 6 \text{ minute}$

empty the container =

53.It takes 12.5 minutes to completely fill a vessel with juice. However, kids are continuously drinking juice from the vessel at a rate which can empty the vessel in 25 minutes. A the current rate, how long will it take to completely fill the vessel?

A. 20 minutes

B. 12.5 minutes

C. 25 minutes

Ans: C Sol:

Time taken to fill the vessel with juice completely = 12.5 minutes=> Time taken by kids to emptying the vessel = 25 minutesLet capacity of the vessel = LCM (12.5, 25

) = 25 unit Efficiency of filling the vessel = 25 -۰.

$$\frac{12.5}{12.5} = 2 \text{ unit}$$

Efficiency of emptying the vessel = $-\frac{25}{2} = -1$ unit

$$-\frac{1}{25}$$
 = -1 ui

Net efficiency of both = 2 - 1 = 1 unit At the current rate, how long will it take to completely fill the vessel $\frac{25}{1} = 25$ minutes

54.A flask has two holes. The first hole alone makes the full flask empty in 9 minutes and second hold alone makes the full flask empty in 16 minutes. If water leaks out at a constant rate, how long in minutes does it take if both the holes together empty the flask?

(A)
$$\frac{19}{25}$$

(B) $4\frac{19}{25}$
(C) $5\frac{20}{25}$
(C) $5\frac{19}{25}$
(D) $5\frac{19}{25}$
A. (A)
B. (C)
C. (B)
D. (D)

Ans: D

Sol:

Let the capacity of tank be (LCM of 9 and 16) = 144 units



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Number of units emptied by first hole in 1 minute = 144/9 = 16 units/min Number of units emptied by second hole in $1 \text{ minute} = \frac{144}{16} = 9 \text{ units/min}$ Total units emptied by both the pipes together = 25 units/minTime taken by both the pipes together to empty the tank = $144/25 = 5\frac{19}{25}$ units 55.In terms of percentage profit, which of the following transactions is the best? A. Cost Price = 60, Profit = 32B. Cost Price = 80, Profit = 44C. Cost Price = 50, Profit = 26D. Cost Price = 70, Profit = 40Ans: D Sol: When Cost Price = 60, Profit = 32 $\frac{32}{32} \times 100 = 53.3\%$ Profit % = 60When Cost Price = 80, Profit = 44Profit % = $\frac{44}{80} \times 100 = 55\%$ When Cost Price = 50, Profit = 26Profit % = $\frac{26}{50} \times 100 = 52\%$ When Cost Price = 70, Profit = 40Profit % = $\frac{40}{70} \times 100 = 57.14\%$ Hence, In terms of profit%, transactions given in option D is best. 56.A shopkeeper cheats to the extent of 22% while buying and selling fruits, by using tampered weights. His total gain in percentage is: A. 48.5% B. 48.84%

C. 48.25% D. 48.75%

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Ans: B

Sol:

It is given that a shopkeeper cheats to the extent of 22% while buying and selling fruits, by using tampered weights. Common gain = 22%

Gain% =

$$\left[\frac{\left(100 + \operatorname{common \ gain}\%\right)^2}{100} - 100\right]\% = \frac{\left(100 + 22\right)^2}{100} - 100\left]\%$$

57.The cash difference between the selling price of an article at a profit of 8% and 12% is Rs. 3 . The ratio of two selling prices is: A. 27:28 B. 27:29 C. 29:31 D. 27:31

Ans: A Sol: Let cost price of an article = 100 unit Profit = 8%Selling price of the article = 100 unit + 8unit = 108 unitWhen profit = 12%Selling price of the article = 100 unit + 12unit = 112 unitAccording to question \Rightarrow 4 unit = Rs. 3 \Rightarrow 1 unit = Rs. 4 Ratio of two selling prices = $108 \times \frac{3}{4}: 112 \times \frac{3}{4} = 108: 112 = 27: 28$



58.A man buys a refrigerator at Rs. 22,000 and pays an additional Rs. 1,000 for transport and Rs. 2,000 for installation. What should be the selling price to get a profit of 15% on the whole transaction?

A. Rs. 27,250 B. Rs. 28,500

- C. Rs. 28,750
- D. Rs. 29,250

Ans: C

Sol:

The man buys a refrigerator at Rs. 22,000 and pays an additional Rs. 1,000 for transport and Rs. 2,000 for installation. Net cost price of refrigerator = Rs 25000 Profit = 15%Selling price = $(115/100) \times 25000$ = Rs 28,750

59.8 boxes of a fruit were purchased for Rs. 9,600. 5 boxes were sold at a profit of 10% and 3 boxes were sold at a loss of 10%. What is the net gain in percentage?

A. 2.75%

B. 2.5%

C. 2%

D. 2.25%

Ans: B

Sol: 8 boxes of a fruit were purchased for Rs. 9,600.

It is given that 5 boxes were sold at a profit of 10% and 3 boxes were sold at a loss of 10%.

 $\frac{\text{Net gain in percentage}}{\frac{5 \times 10\% - 3 \times 10\%}{8}} = \frac{50\% - 30\%}{8} = \frac{20\%}{8} = 2.5\%$

60.The cost price of a set of 2 pants + 4 shirts or 1 pant + 6 shirts is Rs. 5,600. A shopkeeper decided to sell them separately. He sold 10 shirts for Rs. 6,000. Find the amount of profit or loss per shirt.

A. Profit Rs. 1000	B. Loss Rs. 1000
C. Profit Rs. 100	D. Loss Rs. 100

Ans: D

Sol: The cost price of a set of 2 pants + 4shirts or 1 pant + 6 shirts is Rs. 5,600. Cost price of 2 pants + 4 shirts = Rs. 5600(1) Cost price of 1 pant + 6 shirts = Rs. 5600.....(2) Multiply equation (2) by 2 Cost price of 2 pant + 12 shirts = Rs. 11200.....(3) Subtract (1) from (3) Cost price of 8 shirts = Rs. 5600Cost price of 1 shirt = Rs. 700He sold 10 shirts for Rs. 6,000. Selling price of 1 shirt = Rs. 600Loss = Cost price - Selling price = Rs. 700- Rs. 600 = Rs. 100

61.An article was sold for Rs. 2500 at a profit of 25%. What was the amount of profit? A. Rs. 1000 B. Rs. 500 C. Rs. 250

D. Rs. 2000

Ans: B Sol: 125% of CP = Rs 2500 25% of CP = Rs 500

62.160 cycles were sold for Rs. 524,000 resulting in a loss of 10%. What was the cost price of a cycle (in Rs.)? (rounded off to the nearest rupee)

A. 3275 B. 3639 C. 4321 D. 4763

Ans: B Sol: Selling price of 160 cycles = Rs. 524,000 Loss = 10% Cost price of 160 cycles = $524,000 \times \frac{100}{90} = 582222$



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Cost price of 1 cycles =
$$\frac{582222}{160} = 3639$$

63.Manu's piggy bank contains Rs. 221 in the form of 50 paise, Rs. 1 and Rs. 2 coins in the ratio of 4:3:6. What is the number of 50 paise coins in the piggy bank?

- A. 52
- B. 13
- C. 104
- D. 26

Ans: A

Sol:

Manu's piggy bank contains Rs. 221 in the form of 50 paise, Rs. 1 and Rs. 2 coins in the ratio of 4 : 3 : 6. Let number of 50 paise coins = 4x Number of Rs. 1 coins = 3x Number of Rs. 2 coins = 6x Now, Amount in the form of 50 paise coins = 2x Amount in the form of Rs. 1 coins = 3x Amount in the form of Rs. 2 coins = 12x A.T.Q. \Rightarrow 2x + 3x + 12x = Rs. 221 \Rightarrow 17x = Rs. 221 \Rightarrow x =13 Hence. number of 50 paise coins = 52

64. There are total 200 students in a school, of which one fifth are boys. Find the number of girls in the school?

A. 160 B. 16 C. 140

D. 40

Ans: A Sol:

Since, the one fifth of the total are boys, Hence, four fifth of the total will be girls. $\Rightarrow (4/5) \times 200 = 160$ Hence, option A is the correct answer. 65. There are total 200 students in a school, of which 3/10th are boys. Find the number of girls in the school. A. 60 B. 140 C. 40 D. 120 Ans: B Sol: Since boys are 3/10th of the total students, \therefore Girls will be 7/10th of the total students. Number of girls are = $(7/10) \times 200 = 140$ Hence, option B is the correct answer. 66.Divide Rs. 210 in the ratio 2: 3: 4: 5. The respective amounts are: A. 30, 45, 65 and 70 B. 30, 45, 60 and 75 C. 35, 40, 60 and 75 D. 30, 40, 60 and 80 Ans: B Sol: Let the amounts be 2x, 3x, 4x and 5x

Let the amounts be 2x, 3x, 4x and 5x respectively. \therefore Total amount is = 2x + 3x + 4x + 5x = 14x Given, 14x = 210; x = 1 So, the amounts are $2 \times 15 = 30$; $3 \times 15 = 45$; $4 \times 15 = 60$; $5 \times 15 =$ 75

Hence, option B is the correct answer.

67.Two buses travel to a place at the speed of 45 km/hr and 60 km/hr respectively. If

the second bus takes $5\frac{1}{2}$ hours less than the first for the same journey, find the length of the journey. A. 950 km

B. 1000 km C. 990 km

D. 1050 km

Ans: C



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Sol:

Let x be the distance of the journey.

Time taken by the First bus = $\frac{45}{45}$ hr

Time taken by the Second bus = $\overline{60}$ hr A.T.Q.:

х

 $\frac{x}{45} = \frac{x}{60} = 5\frac{1}{2} = \frac{11}{2}$ hr x = 990 km

68.A car covers a certain distance in 8 hours at a speed of 50 kmph. What should be the increase in speed to cover the same distance in 5 hours.

A. 50 kmph B. 40 kmph C. 30 kmph

D. 80 kmph

Ans: C

Sol: Distance = $8 \times 50 = 400$ km If time taken is 5 hrs, \therefore Speed = 400/5 = 80 km/hr \therefore Increase in speed = 80-50 = 30 km/hr Hence, option C is the correct answer.

69.A cyclist covers a distance of 14 km in 25 minutes. How much distance will he cover in 18 minutes (in km)?

A. 9.4 B. 9.78 C. 10.26 D. 10.08

Ans: D Sol: Distance covered by cyclist in 25 minutes = 14 km Distance covered by cyclist in 25 minutes = $\frac{14}{25}$ km

Distance covered by cyclist in 18 minutes = 14 252

$$\frac{14}{25} \times 18 = \frac{232}{25} = 10.08 \text{ km}$$

70.Speed of Boat against the stream is 40 km/hr and in still water is 55 km/hr. Calculate the speed of boat with the flow of stream

(A) 75 km/hr

(B) 70 km/hr

(C) 60 km/hr

(D) 65 km/hr

A. (D)

B. (A)

C. (C) D. (B)

Ans: D Sol: Let Speed of stream is W kmph

Let speed of stream is w kinpi

Speed of boat in still water B = 55 kmph

Speed of boat in upstream = B-W = 40 kmph(given)

Speed of stream W = 55-40 = 15 kmph

Speed of boat in Downstream = B+W = 55+15 = 70 kmph

71.Two school vans start from a house at an interval of 8 minutes and travel with a speed of 25 km/hr. With how much speed (km/hr) should a woman coming from the opposite direction towards the house travel, to meet the vans at an interval of 4 minutes?

- A. 25
- B. 27
- C. 26 D. 24



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Ans: A

Sol:

Two school vans start from a house at an interval of 8 minutes and travel with a speed of 25 km/hr.

⇒ Distance covered by school vans in 8 minutes @ 25 km/hr = Distance covered by women in 4 minutes @ x km/hr

 $25 \times \frac{8}{60} = (25 + x) \times \frac{4}{60}$ $\Rightarrow 50 = 25 + x$ $\Rightarrow x = 25 \text{ kmph}$ Hence, Speed of the women = 25 kmph.

72.The speed of car M is twice that of car W. If car M covers 120 km in 2 hrs & 30 mins, what is the speed of car W?

A. 36 kmph

B. 48 kmph

C. 24 kmph

D. 42 kmph

Ans: C

Sol: Car M covers 120 km in 2 hrs & 30 mins.

Speed of car M $\frac{120}{2\frac{1}{2}} = \frac{120}{5} \times 2 = 24 \times 2 = 48 \text{ km/hrs}$

The speed of car M is twice that of car W. 48

Speed of car W = $\frac{48}{2}$ = 24 kmph

73.Arun and Amit can do a work in 9 and
12 days respectively. If they work alternatively and first Amit starts then. How many days will require to complete 35/36 part of the work?
(A) 10 days (B) 12 days
(C) 5 days (D) 8 days
A. (C)
B. (A)
C. (D)

Ans: B

Sol: A.T.Q.

Amit and Arun can individually complete the work in 12 and 9 days respectively.

Now LCM of (9, 12) = 36 units is the total work.

So, the efficiency of Amit and Arun will be 3 units and 4 units respectively.

Amit will start the work and on Alternate days Arun will follow him.

so,

Total work done in two days = 3 + 4 = 7 units

so, 35 units out of 36 will be done in = 5×2 days = 10 days.

74.Atul and Vinay can complete work in 5 days by working together. If Vinay can complete the work alone in 8 days. Then how many days will Atul take to finish the work alone?

(A) $\frac{40}{3}$ days (B) $\frac{20}{3}$ days

(C) 9 days (D) 10 days

B.C

C. B D. A

Ans: D

Sol: .

Let the total work be = LCM (5,8) = 40

Efficiency of Atul and Vinay $=\frac{40}{5}=8$ unit

Efficiency of Vinay $=\frac{40}{8}=5$ unit



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D. (B)



Atul's Efficiency
$$= 8 - 5 = 3$$
 unit

Required time for Atul $=\frac{40}{3}$ days.

75.Akshat is twice as good a typist as Lokesh and together they finish a piece of work in 7 days. In how many days will Lokesh alone finish the work?

A. 14

B. 10

C. 28

D. 21

Ans: D

Sol:

Let the efficiencies of Akshat and Lokesh are 2 and 1 unit/day respectively.

Total work = $3 \times 7 = 21$ units

: Days taken by Lokesh to complete the work = 21/1 = 21 days

Hence, option D is the correct answer.

76.Mr. Rajesh is twice as good a worker as Mr. Vishal and together they finish a piece of work in 28 days. In how many days will Vishal alone finish the work?

A. 56

B. 112

C. 84

D. 80

Ans: C

Sol: Mr. Rajesh is twice as good a worker as Mr. Vishal and together they finish a piece of work in 28 days.

One day work of Mr. Rajesh and Mr. Vishal

1

together = 28 unit

Let Number of days taken by Mr. Vishal to complete the work = 2x

Number of days taken by Mr. Rajesh to complete the work =x

One day work of Mr. Vishal = $\frac{1}{2x}$ unit



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One day work of Mr. Rajesh = x unit According to question

$$\frac{1}{x} + \frac{1}{2x} = \frac{1}{28}$$

$$\Rightarrow \frac{2+1}{2x} = \frac{1}{28}$$

$$\Rightarrow \frac{3}{2x} = \frac{1}{28}$$

$$\Rightarrow 2x = 28 \times 3 = 84$$

Hence, Number of days taken by Mr. Vishal to complete the work = 2x = 84

77.Amrit is twice as good a painter as Kushal and together they finish a piece of work in 6 days. In how many days will Kushal alone finish the work?

A. 10

B. 12

C. 24 D. 18

Ans: D

Sol:

Amrit is twice as good a painter as Kushal. Let Efficiency of Kushal = 1 unit Then Efficiency of Amrit =2 unit It is given that they finish a piece of work in 6 days.

Let total work = $6 \times 3 = 18$ unit.

Number of days taken by Kushal to finish

the work = $\frac{18}{1} = 18$ days

78.The areas of two similar triangles are 169 sq cm. and 121 sq cms. If the longest side of larger triangle is 26 cm, then the length of the longest side of the other triangle is _____.

A. 26 cm B. 18 cm

 $\frac{3}{18} \text{ cm}$

C. 28 cm D. 22 cm

). 22 CIII



Ans: D Sol:

The areas of two similar triangles are 169 sq cm. and 121 sq cms.

$$\Rightarrow \frac{ar(\Delta ABC)}{ar(\Delta PQR)} = \left(\frac{\text{longest side of ABC}}{\text{longest side of PQR}}\right)^2$$
$$\Rightarrow \frac{169}{121} = \left(\frac{26}{x}\right)^2$$
$$\Rightarrow \frac{26}{x} = \frac{13}{11}$$

 \Rightarrow x = 22 cm

Hence, the length of the longest side of the other triangle = 22 cm

79.A wheel has a diameter of 84 cm. How many revolutions should it make to cover a distance of 792 m? ($\Pi = 22/7$)

A. 298

B. 300

C. 312

D. 256

Ans: B

Sol:

Radius(r) = 84/2 = 42 cm Circumference of the wheel, $2\Pi r = 2 \times \frac{22}{7} \times 42 = 264$ cm

Now, revolutions made by the wheel will be = 79200/264 = 300Hence, option B is the correct answer.

Hence, option B is the correct answer.

80.The number of sides of a regular polygon whose interior angles are 168° each is:

A. 20 B. 30

C. 15

D. 31

Ans: B

Sol:

Exterior angle = $180 - 168 = 12^{\circ}$ Number of sides = $360 \div$ exterior angle = $360 \div 12 = 30$ sides



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Hence, option B is the correct answer.

81.Two arcs of two different circles are of equal lengths. If these arcs subtend angle of 65° and 104° at the centres of the circles. Find the ratio of the radii of the two circles.
(A) 8:5 (B) 13:7
(C) 5:8 (D) 7:13
A. B
B. D
C. A
D. C

Ans: C Sol:

Let r_1 and r_2 be the radii of the two circles and "*l*" be the length of each arc. And the angles subtend at the centre are 65° and 104° respectively. We know that, arc length "*l*" = r. θ Here, $r_1.\theta_1 = r_2.\theta_2$ $\Rightarrow r_1/r_1 = 0.000 = 104\%/65\%$

 $\Rightarrow r_1/r_2 = \theta_2/\theta_1 = 104^{\circ}/65^{\circ}$ $\Rightarrow r_1/r_2 = 8/5$

82.The length of the three sides of a right angled triangle are (x - 2) cm, x cm and (x + 2) cm respectively. Then the value of x is A. 10

- B. 8
- C. 4
- D. 0

Ans: B

Sol: In right angled triangle (Hypotenuse)² = $(Base)^2 + (Perpendicular)^2$ $(x + 2)^2 = x^2 + (x - 2)^2$ $x^2 + 4x + 4 = x^2 + x^2 - 4x + 4$ $x^2 = 8x$ x = 8

83.Water flows in a Tank 150 m \times 100 m at the base, thought a pipe whose cross section is 2 dm by 1.5 dm, at the speed of 15 km/h. In what time will the water be 3 m deep? A. 100 h B. 120h C. 140h D. 150h



Ans: A

Sol:	Required	Time
$2 \times 10 \times$	1.5×10×15×1000	
1	50×100×3	
[∵ 1 dn	n = 10m]	
_ 20×1	5×15×1000	
- 150	0×100×3	

=100 h

84.The volume (in cubic cm) of a right circular cylinder with radius 1 cm and height 2 cm is: ($\pi = 22/7$)

A. 22/7

B. 22 C. 44

D. 44/7

Ans: D

Sol:

As we know that volume of right circular cylinder = $\pi r^2 h$

 $\frac{22}{7} \times 1 \times 2$

Here, r = 1 cm and h = 2 cm

 $\frac{22}{7} \times 2 = \frac{44}{7} \text{ cm}^3$

Hence, option D is the correct answer.

85.The ratio between the length and breadth of a rectangular board is 7:5. If the breadth of the board is 20.5 cm, find the length in cm.

A. 19 .9 B. 24 .3 C. 28 .7 D. 14 .6

Ans: C

Sol: The ratio between the length and breadth of a rectangular board is 7:5. Let length of a rectangular board = 7xBreadth of a rectangular board = 5xThe breadth of the board = 20.5 cm A.T.Q. $\Rightarrow 5x = 20.5 \text{ cm}$ $\Rightarrow x = 4.1 \text{ cm}$ $\Rightarrow 7x = 28.7 \text{ cm}$ length of a rectangular board = 28.7 cm

86.Given the sides of a triangles as 3.4 cm and 5.2 cm, what can be the length of the third side (x) in cm? A. 1.8 < x < 8.6B. > 8.6 C. < 1.8 D. 3.4 < x < 5.2

Ans: A

Sol:

Given the sides of a triangles as 3.4 cm and 5.2 cm.

If two sides of a triangle are given then third side of the triangle is always greater than the difference of two given sides and always less than the sum of two given sides. Hence, (5.2 - 3.4) < x < (5.2 + 3.4) $\Rightarrow 1.8 < x < 8.6$

87.A rectangular water reservoir contains 42,000 litres of water. Find the depth of water in the reservoir, if the base measures 6m by 3.5 m.

A. 1 m B. 2.5 m C. 3 m D. 2 m

Ans: D

Sol: Let the depth of the water reservoir = x meter

According to question

$$6 \times 3.5 \times x = \frac{42000}{1000} \text{ m}^3$$

$$\Rightarrow x = 2 \text{ m}$$

88.The volume (in cubic cm) of a right cylinder with radius 2.5 cm and height 2 cm is: (Take $\varpi = 22/7$)



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A. 275 B. 275/21 C. 275/2 D. 275/7

Ans: D

Sol:

Volume of the right circular cylinder,

 $\Pi r^{2}h = \frac{22}{7} \times \left(\frac{5}{2}\right)^{2} \times 2 = \frac{275}{7}$ Hence, option D is the correct answer.

89.Find out which of the following sets form co-prime numbers.

A. (12,7) B. (2, 42) C. (3,9) D. (43,129)

Ans: A Sol: Two numbers forms a set of co-prime when their HCF is 1. HCF(12,7) = 1HCF(2,42) = 2HCF(3,9) = 3HCF(43, 129) = 43Hence, (12,7) is a set of co-prime numbers.

90.If two-third of three-fifth of a number is 42, find one-third of that number? A. 40 B. 30

C. 45

D. 35

Ans: D

Sol: It is given that two-third of three-fifth of a number is 42 Let that number be x.

$$\Rightarrow \frac{2}{3} \times \frac{3}{5} \times x = 42$$
$$\Rightarrow x = 42 \times \frac{5}{3} \times \frac{3}{2} = 105$$
$$\Rightarrow x = 42 \times \frac{5}{3} \times \frac{3}{2} = 105$$

Now , one-third of x =





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91. From the given options, find the rational

number between 2/4 and 0.6

93. Find the difference between the smallest number of five digits and greatest number of four digits?

- A. 3 **B**. 2
- C. 0
- D. 1

Ans: D

Sol: smallest number of five digits =10000 greatest number of four digits = 9999 Required difference = 10000 - 9999 = 1

94.Solve : 4/11 + 2/7 + 3/5? A. 37/35 B. 481/385 C. 13/35 D. 37/385

Ans: B





Sol: Sol: Consider: $(2.25)^{(1/2)} = (1.5 \times 1.5)^{(1/2)} = 1.5$ Consider 4/11 + 2/7 + 3/5 $\frac{4}{11} + \frac{2}{7} + \frac{3}{5} = \frac{140}{385} + \frac{110}{385} + \frac{231}{385} = \frac{481}{385}$ 99.Compute: 4992 ÷ 624 – 10 A. 2469/307 **B**. -2 95.Solve : 0.275 + 0.569 - 0.336? C. 2 A. 0.123 D. 2496/307 B. 0.508 C. 0.457 Ans: B D. 0.594 Sol: Consider $4992 \div 624 - 10$ Ans: B $\Rightarrow 8 - 10 = -2$ Sol: 0.275 + 0.569 - 0.336 = 0.508100.The value of $(0.3)^2 \div 100 = ?$ A. 0.09 96.Solve : 345678 x 999999? B. 0.0009 A. 345677653422 C. 0.0.09 B. 354677654322 D. 0.9 C. 345677654322 D. 346577564322 Ans: B Sol: Ans: C Consider $(0.3)^2 \div 100$ Sol: <u>0.09</u> = 0.0009 999999 345678 Х $\rightarrow 100$ $345678 \times (1000000 - 1) = 345678000000 - 345678 =$ 345677654322 101.Solve for 'a': $\frac{7}{a-2} = \frac{5}{a+4}$ 97.Simplify: 3x(x+4) - x(x-2)A. –19 A. $2x^2 + 14x$ B. 38 B. $4x^2 - 14x$ C. 19 C. $4x^2 + 14x$ D. -38 D. $2x^2 - 14x$ Ans: A Ans: A Sol: Sol: 7 5 Consider: 3x(x + 4) - x(x - 2) $\Rightarrow 3x^2 + 12x - x^2 + 2x = 2x^2 + 14x.$ $\overline{a-2} - \overline{a+4}$ \Rightarrow 7a+28 = 5a-10 98.Simplify: (2.25)^(1/2) $\Rightarrow a = -19$ A. 1.5 Hence, option A is the correct answer. B. 15 C. 1.6 $102.3.0 \times 0.3 \times 0.03 \times 0.003 =?$ D. 2/3 A. 81 x 10⁻⁴ B. 81 x 10⁻⁷ C. 81 x 10⁻⁵ D. 81 x 10⁻⁶ Ans: A Ans: D



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Sol: Sol: $(a^{-1} + b^{-1}) \div (a^{-2} - b^{-2}) =$ $3.0\times0.3\times0.03\times0.003$ $= 3^4 \times (10)^{-6}$ $\frac{\left(\frac{1}{a} + \frac{1}{b}\right)}{\left(\frac{1}{a^2} - \frac{1}{b^2}\right)}$ $=\frac{\frac{a+b}{ab}}{\frac{b^2-a^2}{2}}=\frac{(a+b)(a^2.b^2)}{(ab)(b^2-a^2)}=\frac{ab}{b-a}$ $= 81 \times (10)^{-6}$ Hence, option D is the correct answer. 1.13 + 5.8842.004 103.Solve: 106.Fractional expression of $0.06\overline{54}$. A. 3.44 (The bar indicates repeating decimal) B. 3.05 A. 18/275 C. 2.95 B. 18/277 D. 3.50 C. 654 D. 654/1000 Ans: D Sol: Ans: A $\frac{1.13 + 5.884}{2.004} = \frac{7.014}{2.004} = 3.5$ Sol: $0.06\overline{54} = \frac{654-6}{9900} = \frac{648}{9900} =$ 104.Solve : $(3.2 \times 10^4) \div (2 \times 10^5)$ Hence, option A is the correct answer. 16 A. 10² $\cot x = \frac{5}{12}$, then $\sin^2 x + 1 = ?$ B. 0.016 C. 1.6 216 194 D. 1.06 (A) 169 (B) 65 331 313 Ans: A (C) 169 (D) 169 Sol: Consider $(3.2 \times 10^4) \div (2 \times 10^5)$ $\Rightarrow \frac{3.2 \times 10^4}{2 \times 10^5} = \frac{1.6}{10} = \frac{16}{10^2}$ A. (A) B. (D) C. (B) D. (C) 105.Simplify: $(a^{-1} + b^{-1}) \div (a^{-2} - b^{-2})$ ab A. $\overline{b-a}$ Ans: B Sol: a+b $\cot x = \frac{B}{P} = \frac{5}{12}$ В. *ab* ab $H = \sqrt{P^2 + B^2} = \sqrt{169} = 13$ sinx = $\frac{P}{B} = \frac{12}{13}$ C. $\overline{a-b}$ а D. *b* $\sin^2 x + 1 = \left(\frac{12}{13}\right)^2 + 1 = \frac{144 + 169}{169} = \frac{313}{169}$ Ans: A



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109.When the angle of elevation is become 60° to 30° by the Sun, Then shadow of water increases 30 meter more. Find the height of tower. (A) $12\sqrt{3}$ metre

(B) $16\sqrt{3}$ metre

(C) $17\sqrt{3}$ metre

(D) $15\sqrt{3}$ metre	
A. (D)	B. (C)
C. (B)	D. (A)

Ans: A Sol: Let the height be h. A.T.Q.: $\tan 60 = \frac{h}{x}$ $\tan 30 = \frac{h}{x+30}$ $x \tan 60 = (x+30) \tan 30$ $x\sqrt{3} = \frac{x+30}{\sqrt{3}}$ x = 15Then, h = 15 $\sqrt{3}$.

110.The height of a light house is 20 meter from sea level. The elevation angle of ship is 30° to the top of the light house. Find the distance of the ship from the bottom of the light house.

(A) 16 m (B) ²⁰ ³ m (C) 20 m (D) 30 m A. (A) B. (D) C. (C) D. (B)



height of the lighthouse = 20mAngle of elevation = 30°

 $\tan 30^\circ = AB/BC$ $1/\sqrt{3} = 20/BC$ $BC = 20\sqrt{3} m$



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111. The angle of elevation of a ladder $\theta = 30^{\circ}$ inclined to a wall is 60° . The bottom of the $cos2\theta = cos(2 \times 30^{\circ}) = cos60^{\circ} = 1/2$ ladder is 8 metre away from the wall. Find the length of the ladder. 113.If $\sin A = \frac{4}{5}$ and $\sin B \frac{5}{13}$, then $\cos (A + C)$ (A) 10 metre B) = ? (B) 13 metre 16 63 (B) 65 (A) $\overline{65}$ (C) 15 metre 33 56 (D) 16 metre (C) 65 (D) 65 A. (A) B. (B) A. (B) C. (D) B. (A) D. (C) C. (D) D. (C) Ans: C Sol: Ans: B Let the length of the ladder be x, Sol: Given $\sin A = 4/5$ than $\cos A = 3/5$ then $\cos 60^{\circ} = 8/x = 1/2$ And $\sin B = 5/13$ than $\cos B = 12/13$ x = 16 mCos(A+B) = cosAcosB - sinA sinB $= 3/5 \times 12/13 - 4/5 \times 5/13 = (36-20)/65 =$ 112. If $\sqrt{3} \tan \theta = 1$, then find the value of 16/65 $\cos 2\theta$. 1 $114.\operatorname{cosec}^2 A \times \cos^2 A = ?$ (A) $\overline{2}$ (A) tan^2A (B) 1√3 (B) $\cot^2 A$ 1 (C) 1 (D) 1 A. (B) (D) sec^2A B. (D) A. (A) B. (D) C. (C) C. (C) D. (A) D. (B) Ans: D Ans: D Sol: Sol: $\sqrt{3}tan\theta = 1$ $cosec^2 A \times cos^2 A = \frac{1}{sin^2 A} \times cos^2 A = cot^2 A$ $tan\theta = 1/\sqrt{3}$



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115.Distance between two straight poles of height 15 m and 20 m is 12 m. Find the distance between the top of two poles.(A) 11 m

(B) 12 m

(C) 13 m

(D) 14 m

A. (A)

B. (C)

C. (D)

D. (B)

Ans: B **Sol:** PQ = 20 m

AB = 15 m

PR = 20-15 = 5 m

Distance between top of poles $AP = \sqrt{12^2 + 5^2} = 13m$



116.If 5 tan θ = 4, find the value of (3 sin θ - 2 cos θ) ÷ (2 sin θ + 3 cos θ)

- (A) $\frac{6}{23}$
- (A) --2

(B) 23



(C) $\frac{\overline{23}}{5}$ (D) $\frac{5}{23}$ A. (D) B. (B) C. (C)

D. (A)

Ans: B

Sol: Given, $\tan \theta = 4/5$ In the above expression, $(3 \sin \theta - 2 \cos \theta) \div (2 \sin \theta + 3 \cos \theta)$ On dividing both numerator and denominator by $\cos \theta$, we get $(3\tan \theta - 2)/(2 \tan \theta + 3)$ On putting the value of $\tan \theta$ in the above equation, we get $[3 \times (4/5) - 2]/[2 \times (4/5) + 3] = 2/23$

117.If $\sin\theta = 2/3$, find the value of $\sec\theta$ and $\cot\theta$. A. $\sqrt{5}/2$, $2/\sqrt{5}$ B. $2/\sqrt{5}$, 3/5C. $(3\sqrt{5})/5$, $\sqrt{5}/2$ D. 3/5, $(3\sqrt{5})/5$





In right angle triangle ABC, by Pythagoras theorem

 $BC = \sqrt{5} cm$





So, $\sec\theta = 3/\sqrt{5}$ or $(3\sqrt{5})/5$

And $\cot\theta = \sqrt{5/2}$

118.sin² 21 ° + sin² 69 ° is equal to A. 2 sin² 21 ° B. 2 sin² 69 ° C. 1 D. 0

Ans: C Sol: $\sin^2 21^\circ + \sin^2 (90^\circ - 21^\circ) = \sin^2 21^\circ + \cos^2 21^\circ = 1$ $(\sin(90^\circ - x) = \sin x)$

119.The value of cos (1110°) is: A. $\sqrt{3}/2$ B. 1/2C. $1/\sqrt{2}$ D. 1

Ans: A **Sol:** Given, cos (1110°)

 $=\cos(3\times360^\circ+30^\circ)$

 $= \cos 30^{\circ}$

 $=\sqrt{3/2}$

tan B = tan A = ⁸ and 24, then 120.If $\cos(A+B) = 2$ 87 304 (B) 425 (A) 425 297 416 (C) 425 (D) 425 A. (A) B. (C) C. (B) D. (D)

Ans: A **Sol:** Tan A = 15/8

Then, $\frac{15}{\sqrt{15^2 + 8^2}} = \frac{15}{\sqrt{289}} = \frac{15}{15/17}$

$$\cos A = \frac{\frac{8}{\sqrt{15^2 + 8^2}}}{\sqrt{289}} = \frac{8}{\sqrt{289}} = \frac{8}{17}$$

Similarly, $\tan B = 7/24$

Then, sin A = 7/25 and cos A = 24/25 Cos (A + B) = cos A cos B - sin A sin B = $(8/17) \times (24/25) - (15/17) \times (7/25)$ = (192 - 105)/425 = 87/425





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